

Intelligent Electronic Speed Controller, Phase I

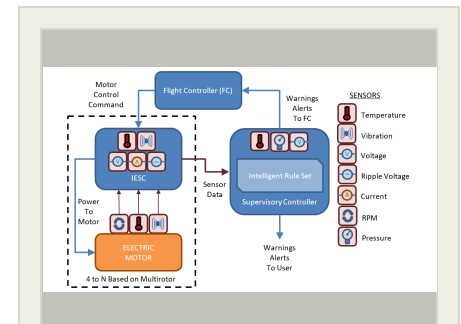
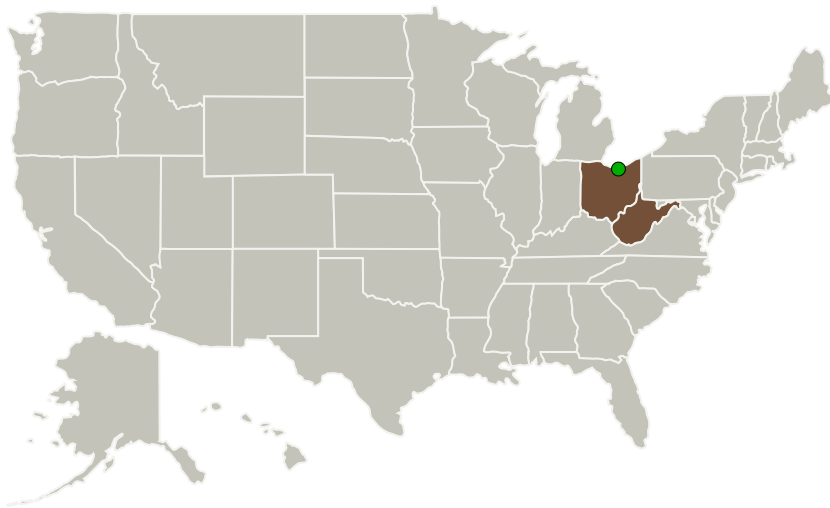
Completed Technology Project (2017 - 2017)



Project Introduction

This project intends to design and develop an Intelligent Electronic Speed Controller (IESC) for use on Unmanned Aerial Vehicles (UAVs). The IESC will advance the state-of-the-art of health-state awareness. This will be achieved through the integration of propulsion system health monitoring sensors that - in unison with an Intelligent Rule Set - will be able to monitor system and component performance trends and predict propulsion system faults. The system is designed to provide the analytic capability necessary to predict propulsion system degradation, maintenance or repair needs. An Artificial Neural Network (ANN) will be trained on data from IESC sensors from nominal flights and those with known faults leading to failure. After training, an initial Intelligent Rule Set will be extracted to represent the knowledge of the ANN and used in the system to predict failures. This set of rules will be periodically updated as more flight data is collected.

Primary U.S. Work Locations and Key Partners



Intelligent Electronic Speed Controller, Phase I Briefing Chart Image

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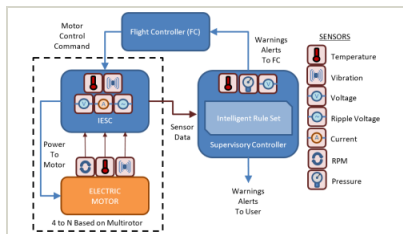


Organizations Performing Work	Role	Type	Location
4D Tech Solutions, Inc.	Lead Organization	Industry Historically Underutilized Business Zones (HUBZones)	Morgantown, West Virginia
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations

Ohio	West Virginia
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Images



Briefing Chart Image

Intelligent Electronic Speed Controller, Phase I Briefing Chart Image

(<https://techport.nasa.gov/image/132735>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

4D Tech Solutions, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

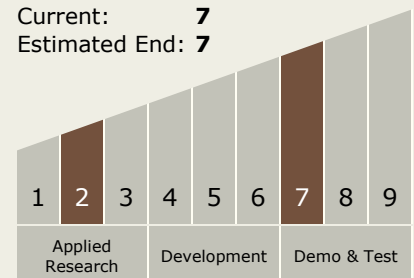
Carlos Torrez

Principal Investigator:

Eric Sorton

Technology Maturity (TRL)

Start: 2
Current: 7
Estimated End: 7



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Technology Areas

Primary:

- TX01 Propulsion Systems
 - └ TX01.3 Aero Propulsion
 - └ TX01.3.8 All Electric Propulsion